

Claims

1. A pickup device driving apparatus comprising:
 - a base of which the position is fixed with respect to a lens part;
 - a movable part which is provided to face the base;
 - a pickup device which is attached to the movable part in a state that a pickup surface is perpendicular to an optical axial direction;
 - a first support part and a second support part which are provided between the base and the movable part and support the movable part;
 - a first rotating part which is provided between the base and the first support part;
 - a second rotating part which is provided between the base and the second support part at a position which is moved from the first rotating part in the optical axial direction in parallel;
 - a third rotating part which is provided between the movable part and the first support part;
 - a fourth rotating part which is provided between the movable part and the second support part at a position which forms a vertex of a parallelogram with respect to the first rotating part, the second rotating part, and the third rotating part; and

a driving part which changes the position of pickup device relative to the lens part,

wherein rotating center axes of the first rotating part, the second rotating part, the third rotating part, and the fourth rotating part are perpendicular to the optical axial direction and parallel to one another, and

wherein the position of the pickup device is changed relative to the lens part in a state that the first rotating part, the second rotating part, the third rotating part, and the fourth rotating part form vertexes of the parallelogram.

2. The pickup device driving apparatus of Claim 1, wherein the first support part is rotatably connected to the base by a first plural point and rotatably connected to the movable part by a second plural point, and the first plural point and the second plural point form a plane,

wherein the second support part is rotatably connected to the movable part and the base,

wherein the first rotating part connects the base to the first support part at the first plural point, and

wherein the third rotating part connects the movable part to the first support part at the second plural point.

3. The pickup device driving apparatus of Claim 2, wherein at least one of the first rotating part, the

second rotating part, the third rotating part, and the fourth rotating part is a leaf spring.

4. The pickup device driving apparatus of Claim 2, wherein the first rotating part, the second rotating part, the third rotating part, and the fourth rotating part are leaf springs.

5. The pickup device driving apparatus of Claim 3, wherein the movable part, the first support part, the second support part, and the leaf spring are integrally formed, and at least one of the movable part, the first support part, and the second support part has a reinforcement part for increasing rigidity.

6. The pickup device driving apparatus of Claim 2, wherein at least one of the first rotating part, the second rotating part, the third rotating part, and the fourth rotating part is a hinge part.

7. The pickup device driving apparatus of Claim 2, wherein the first rotating part, the second rotating part, the third rotating part, and the fourth rotating part are hinge parts.

8. The pickup device driving apparatus of Claim 2, wherein an elastic part is provided between the first support part and the second support part.

9. The pickup device driving apparatus of Claim 2, further comprising a pressing part for pressing the

movable part in a predetermined direction,

wherein the driving part reduces a press force applied to the movable part by the pressing part to drive the movable part.

10. A photographing apparatus comprising:

a lens part;

the pickup device driving apparatus of Claim 1; and

an image signal processing part which performs an image signal process on a signal output from the pickup device of the pickup device driving apparatus.

11. The photographing apparatus of Claim 10, further comprising a displacement amount calculating part which calculates a displacement amount of the pickup device in a direction perpendicular to the optical axial direction; and

a correcting part which corrects an image signal processed by the image signal processing part, based on the displacement amount of the pickup device in the direction perpendicular to the optical axial direction calculated by the displacement amount calculating part.

12. A monitoring camera apparatus comprising:

a lens part;

the pickup device driving apparatus of Claim 1;

an illumination-intensity change detecting part which detects change in illumination intensity;

a filter part which attaches and detaches an infrared-light cut filter on an optical axis of the lens part depending on the change in illumination intensity detected by the illumination-intensity detecting part; and

a control part which drives the driving part of the pickup device driving apparatus when the infrared-light cut filter of the filter part is attached and detached.